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Introduction

Though the names have been different, discussion about inclusive growth has been an age old issue. The emphasis, however, has also been different. In the 19th century, it was concern with widening inequalities in income which propelled scholars like Marx to argue for "forced" equalization in incomes. This did not quite fit in with democracy and the middle class; as Barrington Moore famously put it, "No bourgeoisie, and no democracy". The demand for redistribution, in a politically acceptable form, most likely got its first airing with the World Bank publication, *Redistribution with Growth*. This pioneering study accurately described the policy imperative: the poor, the bottom half of the population, had to share in the growth process.

The concept of a universal absolute poverty line was also introduced by the Redistribution authors, Ahluwalia, Carter and Chenery, and given a definition which later on, in 1990, became enshrined as the "$ a day poverty line". This happened in the mid 1970s and from then on, economists have been creative with ideas about describing the evolution of policies and targets.

The *Redistribution with Growth* (RWG) study, while innovative, had policy problems. In particular, it was recognised that redistribution literally involved a transfer of physical assets, and that such transfers were not feasible on a large scale in democratic economies. The example of Russia and China could not really be followed by most countries. This led to some reconstruction of the basic thesis and goals of policy. Not long after the RWG study, the concept of basic needs was introduced i.e. the goal of policy was to address the basic needs of all individuals of society – health, education, and equality of opportunity.

The *basic needs* approach was transformed by the UN into the Human Development Indicators published annually by the UN as part of its Human Development Reports. In the early 1990s, a *market friendly* approach to development and removal of poverty was offered and sometime in the late 1990s the development practitioners were discussing different forms of *pro-poor* growth. And finally, we come to the new term "inclusive growth" perhaps not coincidentally coined by one of the RWG authors, Montek Ahluwalia.

And it is inclusion and growth which this paper will discuss in detail. It is a new all inclusive term and it is important to define what we will attempt to measure. "Inclusive growth" is likely more a process rather than an outcome, though obviously the outcome matters. There are also some possible misconceptions about inclusive growth. For example, such growth does not necessarily involve a large role for government intervention. In the limit, if the growth process is inclusive, the role of direct government involvement via subsidies and transfers should diminish, rather than increase, over time and development.

The plan of the paper is as follows. Section 2 describes the data and definitions used in this study. Section 3 attempts to define the characteristics of inclusive growth. Sections 4 and 5 document the facts about economic growth in India. Often in the polemical debate about poverty and policy, and the poverty of policy, the facts (unfortunately) become irrelevant. Sections 6 looks at levels and changes in inequality, and growth inequality. One rather striking finding about the inclusive growth process in India is that real inequality has stayed constant for almost 25 years since 1983. And that consumption growth of the poor has been the fastest. Section 7 documents the level and changes in absolute poverty. Regarding poverty, the equally striking finding is that as of 2007/8, the Millennium Development Goals of below 15 percent absolute poverty set for 2015 have been achieved a full decade earlier.

Section 8 is about redistributive policies and their effects. Section 9 talks about education, inequality dampening effects of developments in education, and girl boy ratios of education. Section 10 defines and documents the role of the middle class in India's development; in particular, that the middle class reinforces the *inclusion and the growth process*. In other words, a process where involvement of the bottom half helps generate higher economic growth; and this higher growth leads to greater inclusion. Section 11 attempts to document the reasons for the absolute and relative improvement of the poor. The movement from agriculture to non-agriculture high paying jobs, especially in construction, is highlighted. This section also documents the two-way relationship between inclusion and growth. Since the early part of this century, the poor states, because of the relatively large improvements in education and the middle class. Section 12 concludes and outlines some questions for future research.

Section 2 – Data and definitions

In the main, this study uses the large sample National Sample Surveys (NSS) for the years 1983, 1993/94, 1999/2000, and 2004/5. There are two surveys that the NSS conducts in each of the large sample years – a consumption and expenditure (CE) survey, and an employment and unemployment (EU) survey. Until 1993, the households surveyed by the CE and EU surveys were identical. In addition to the eight surveys mentioned above, the recently released small sample (half of large sample) CE and EU surveys for 2007/8 are also used. These NSS surveys provide a rich, and exhaustive, basis for examining the inclusive nature of growth.

The NSS does not conduct any income distribution surveys but the National Council of Applied Economic Research (NCAER) has been conducting such surveys since the mid 1960s. Data for three such surveys have been released – 1975/76, 1994/95 and 2004/5. These data are also used along with state level GDP data from 1980 onwards.

Section 3: What is inclusive growth?

Several definitions abound. Some readily acceptable features of what should be considered inclusive growth are listed below.

1. First and most important is the objective of equality in growth i.e. that the growth is shared equally by all the population. Related to this objective is the desirability of growth being equal to or perhaps even higher for the poorer sections of the population. Note that these objectives say nothing about the static distribution of income. It can be equal, or highly unequal. If the growth rates are similar, then the distribution of income will broadly stay at its original value. Equal growth rates will mean that whatever growth occurs, it was inclusive.

2. There should be some growth, preferably high growth. One can think of growth-inclusion tradeoffs i.e. if high growth comes at the expense of some exclusion, then it is preferable to little or no growth for everybody.

3. Growth should be inclusive across different sectors. In the case of India, there are historical divides between different caste groups, as well as divides based on gender e.g. girls have traditionally had lower levels of education than boys, *ceteris paribus*.

In addition, growth should be relatively even across different *regions* and especially that the backward areas participate fully on a long-term, two to three decades, basis.

4. Inclusion also means a trend towards equality of opportunity. This is an important issue and topic in its own right. It is not explicitly dealt with in this paper; but there is some discussion about the effects of education expansion on both equality of opportunity and inclusion. And it is observed that equality of education broadly leads to an equality of outcomes, *ceteris paribus*.

5. Inclusive growth should be self-perpetuating i.e. the growth should be of a long run nature and should be reinforcing.

6. Poverty reduction. This is a central concern. The pace of poverty reduction is indicative of inclusion. Poverty reduction depends on growth and where the poverty line is relative to the distribution of consumption. With inclusive growth, the poverty gap (difference between the average incomes of the poor and the poverty line) should reduce over time. This will ensure that within the poor, there is 'equal" progress.

7. A separate but related concern. All societies, including India, have direct programs for alleviation of poverty. For the last several decades, India has spent at least 5 percent of GDP each year on direct transfer programs e.g. food subsidies, fertilizer subsidies, kerosene subsidies, mid-day meals, food for work programs, etc. These programs are meant for the poor and to the degree the poor are reached, the programs can be termed inclusive. If there is a lot of leakage, then the programs are not "inclusive".

8. Linked to the effectiveness of social delivery is the judgment or conclusion about the determinants of inclusion/exclusion. There is some belief that inclusive growth means active government intervention. This may or may not be the case and involves an empirical examination.

Section 4 – Economic Growth – Some facts

The next few sections discuss the nature of economic growth in India. It is important to establish the background of growth, before attempting to probe its inclusive nature. There are three major phases of Indian growth. Post independence and till 1980, GDP growth in India averaged around 3.5 percent. The story really begins in 1980 when growth started to exceed 5 percent per annum on a *consistent* basis. Major economic reforms were initiated in 1991 but for a decade, there was no acceleration in GDP growth– it stayed constant at 5.5 percent per annum. Starting 2003, however, there has been a marked acceleration in GDP growth to more than 8 percent per annum.

The facts about GDP growth as reported are clear, but controversy and puzzles persist. There are three questions and puzzles, and hence the controversies. First, what caused India's growth to *accelerate* in the 80s; second, what *prevented* India's growth from accelerating in the nineties as would have been forecast by the magnitude of the 1991 economic reforms; and third, what caused the growth rate to sharply accelerate in 2003/4 *without* the benefit of any new reforms, major or minor.

There are several determinants of the pace of economic growth – capacity to catch-up (the poorer you are, the faster you can grow, *ceteris paribus* – this happens because you can

borrow technology from abroad); the presence of "good" institutions; openness to foreign trade; good fiscal policy; etc. Two of the more important determinants of growth, besides "catch-up", are competitive interest rates and competitive exchange rates. (See Bhalla (2007, 2011) and the references cited there for a detailed exposition of this hypothesis). It is not a coincidence; therefore, that the two growth spurts in the Indian economy were preceded with, or accompanied by, changes towards such competitive policies. A large element of the 1990s reforms was the opening of the Indian economy to foreign trade and by the devaluation of the rupee towards competitive levels. In the three years after these reforms (1993/94 to 1996/1997) the Indian economy grew by over 7 percent per annum. The next spurt happened post 2002.

An attribute of the first puzzle is that the above 5 percent growth rate of the 1980s did *not* represent a significant departure from the growth rate that should have been expected. One reason this conclusion might have been missed by most analysts is that there was a global slowdown in the 1970s, a period when Indian growth collapsed to an average of only 2.9 percent per annum. In addition to the quadrupling of price of oil in 1973 and its doubling in 1978, India was also buffeted with a war (1971 involving Pakistan) and droughts. Hence, the acceleration or break with trend seemed to be large, when in reality there was only a gradual, and minor, acceleration to above trend growth in the 1980s. Second, the 1991 reforms did lead to a sharp acceleration to 7.5 percent GDP growth but this growth rate was not sustained. Real long-term interest rates rose to double-digit levels in the mid-1990s and growth collapsed. This fact helps explain two puzzles – the non-acceleration in the 1990s and the "miracle" high growth since 2003/4 or 2003[1]. The revival in "high" growth around 2003 was preceded by a decline in real interest rates of around 600 basis points (reversal of the mid-1990s increase) in a matter of four years (1999 to 2002).

Table 1 provides a perspective on the comparative nature of India's GDP growth. The table presents both 5 and 20 year averages of GDP growth. No matter what the time period, India's GDP growth has shown a steady upward march. In 1980, a five-year moving average of India's growth placed it around the 60th position in the world. In 2009, it had the 4th position with average 5 year GDP growth of 8.5 percent and average 20 year growth of 6.5 percent.

Table 1 - Indian Growth Performance, 1980-2009

Year	Average(5 years)		Average (20 years)	
	Growth	Rank	Growth	Rank
1980	3.2	56	3.7	60
1985	5.4	19	4.1	35
1990	6.0	12	4.3	27
1995	5.2	28	4.9	17
2000	6.3	11	5.7	11
2005	7.0	7	6.1	6
2009	8.5	4	6.5	4

Source: World Bank, World Development Indicators

The rest of this paper will examine the inclusive nature of this growth for the post 1980 period. The first examination will be on the regional dimension.

[1] The Indian fiscal year runs from April to March and fiscal years will either be referenced as 2003/4 or 2003.

Section 5: GDP growth in India – How inclusive?

Regional inclusion

The last three decades (1980-2010) have witnessed an average GDP growth of 6 percent per annum and a per capita growth of 4.2 percent. How inclusive was this growth on a regional basis? Growth determinants suggest a large role for catch-up i.e. poorer states should have a faster growth rate, *ceteris paribus.* But these very same poorer states may also represent a drag on future growth. Recently, there has been the fear that since most of the population resides in the BIMARU states (Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh), the Indian growth momentum will slow because of a "drag-down" effect of these states.

The possibility of catch-up, and inclusion, is examined with use of state level "national accounts" data. Table 2 (next page) documents state level data for the near twenty years experience of Indian states since the reforms of 1991. The table shows data for two post 1991 reform periods: the initial reform decade 1993-2002, and the recent growth acceleration (but without reforms!) period of 2003/4-2009/10. Data for both state and per capita GDP growth are presented.

Growth is a function of several variables. Catch-up is introduced into the growth model via a term for the log of *initial* beginning of period per capita income; i.e. if the time-period for which the growth rate is being examined is 1992-2002, and then growth rate Y can be expressed as:

$$(1) \qquad Y_{it} = a + b*iY_{it0} + c*X_{it} + e_{it}$$

where i represents state, t represents time, t0 is the initial year (1992 in this example) and e the error term. The term iY is catch-up term represented by the log of income in time t0 and X is a vector of other determinants of growth.

Taking first differences, equation 1 gets transformed into an acceleration of growth model, where

$$(2) \qquad Y_{it} - Y_{it[\_n-1]} = a' + b*(iY_{it0} - iY_{it0[\_n-1]}) + c*(X_{it} - X_{it[\_n-1]}) + e_{it} - e_{it[\_n-1]}$$

With the acceleration model, the difference in the growth rates for the two periods can be regressed on the *difference* in initial per capita incomes for the two periods (1992 and 2002). The latter is nothing more than the growth rate in the *previous* period. This difference model has the advantage in controlling for other "fixed" determinants of growth for different states e.g. whether a state is primarily resource based, or agriculture based, etc.

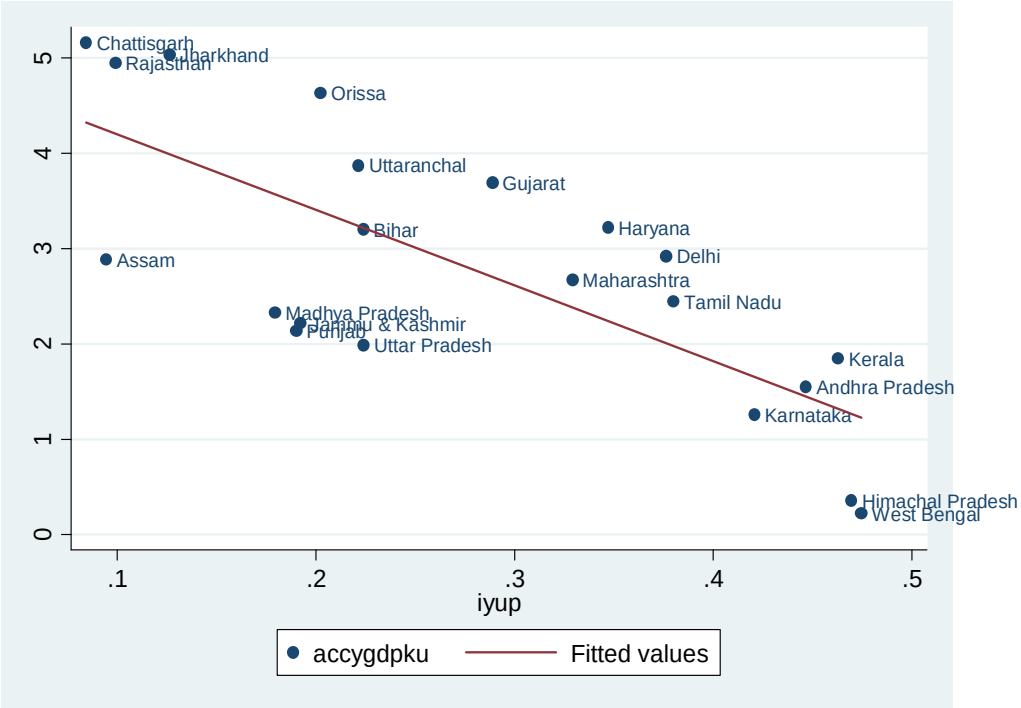
Table 2: Slower growth in 1992-2002, faster growth in 2003-2009

State	Growth (%)		Growth per capita (%)	
	1993-2002	2003-2009	1993-2002	2003-2009
Andhra Pradesh	5.2	7.3	4.0	6.0
Assam	2.5	5.1	0.8	3.7
Bihar	4.9	9.6	2.4	8.0
Chattisgarh	2.5	6.5	0.9	4.8
Delhi	7.3	9.8	3.6	7.9
Gujarat	5.8	7.3	3.8	5.8
Haryana	6.0	8.6	3.6	7.0
Himachal Pradesh	6.7	6.9	5.0	5.3
Jammu & Kashmir	4.2	5.7	1.8	4.3
Jharkhand	3.5	8.3	1.3	6.8
Karnataka	5.6	7.8	4.1	6.5
Kerala	5.1	8.3	4.3	7.1
Madhya Pradesh	3.2	5.0	1.1	3.4
Maharashtra	4.6	7.8	2.7	6.3
Orissa	3.2	7.5	1.8	6.2
Punjab	3.7	5.6	1.8	4.0
Rajasthan	4.7	4.7	2.2	3.0
Tamil Nadu	4.5	7.9	3.5	6.8
Uttar Pradesh	4.7	6.2	2.5	4.5
Uttaranchal	4.2	8.0	2.4	6.5
West Bengal	6.2	6.5	4.7	5.2

The results are revealing. There is a pronounced negative effect (catch-up) of initial growth i.e. states that grew slower in the initial period, 1993-2002, grew faster in the higher growth post 2003 years. The correlation for this simple model is a high 88 percent for all the states and 74 percent for just the big states of India. From a base level of 5 percent, each lower growth of 1 percent in the 1993-2002 period meant that the growth rate 2003 to 2009 was 0.8 percentage points faster.

The first conclusion on observing the pattern in Chart 1 is that initial higher growth is followed by subsequent slower growth. At first glance it does not appear to be the case that poorer states grow faster and hence involve inclusive growth at a regional level. However, the first impressions are misleading. The acceleration in growth model is a transformation of the basic catch-up model; an econometric transformation which controls for several state level fixed effects. If catch-up exists, then it is an indicator of growth spreading to and faster in, poorer states. Note the recent high growth performance in poorer states like Chhattisgarh, Jharkhand, Orissa, Uttaranchal, and Rajasthan, and the “on the line prediction” of the poor state of Bihar.

Chart 1: Acceleration more rapid in formerly slower growing states



Notes: X axis represents per capita growth during the period 1993-2002; the Y axis is the acceleration in per capita growth 1992-2009 i.e. growth 2003-2009 minus growth 1993-2002.

In this first test of inclusion, it was observed that poorer states in the *pre* growth acceleration phase between 1993 and 2002 grew faster in the recent growth acceleration phase. More rapid acceleration in per capita GDP growth in the previously slower growing states is indirect evidence in support of overall inclusive growth.

Section 6 – Inclusive Inequality?

The major policy concern with most fast growth outcomes is that the bottom half possibly does not share equally in the process. The poor achieve absolute gains in real income via fast growth, but it is the relative incomes of the *rich* which increase. Phrased differently, this is the same outcome as inequality increasing according to any one of a variety of inequality indices like Gini. If there was a disturbing increase in the Gini, then there would be a *prima facie* case of inclusive growth not being present.

Nominal vs. real inequality

Conventionally measured nominal inequality measures are problematic when regions are not integrated and/or price levels are not approximately equal across regions or states within a country. Developing countries have wide price variations across states and particularly between the urban and rural sectors. In recognition of this reality, the Planning Commission, since inception of the poverty line in the late 1970s, has maintained *separate* price indices for each state and within each state, a separate index for the rural and urban areas. There are 21 big states in India and therefore 42 separate price indices. The price index for the rural areas is updated via use of the CPI for agricultural workers; the price index for urban areas is updated via use of the CPI for industrial workers.

On an aggregate basis, the average poverty line in rural India is about two-thirds of the average poverty line in urban areas. Or that the urban poverty line is about 50 percent higher than the rural poverty line. Given these large price differences, it makes little sense to use *nominal* calculations of the Gini to describe either the level or the trend in inequality.

There is a further complication regarding calculations of inequality in India. Until recently, there were several, and a minimum of two, estimates of mean per capita consumption, the basis for measurement of consumption inequality, and poverty. The traditional measure of consumption in India is the estimate based on a *uniform* 30 day recall period for all consumption items – perishables, clothing and durables. Over the years, the NSSO authorities and experts have found that such a measure does not adequately capture the consumption of durables, an item with an increasing share in household consumption. Hence, the adoption by the NSSO of a new standard measure of consumption – the *mixed recall* method, one with a 30 day recall period for all food items, and a 365 day recall period for most non-food items. Fortunately, estimates of both the uniform and the mixed recall period are present for all the years since 1983, so a time-series of estimates is available for both measures. However, post 2004/5; estimate of the uniform recall method is not available.

Table 3a presents data on consumption inequality in India for the period 1983 to 2007/8.[2] Nominal inequality Gini increased from a low of .304 in 1983 to a high of .35 in both 2004/5 and 2007/8. This 17 percent increase has formed the basis for several discussions about the uneven nature of the growth process in India, and how the rich are getting richer etc. Some scholars e.g. Pranab Bardhan, have also speculated that the level, and/or increase in inequality in India is not much different than that observed in China.

Table 3a: NSS Consumption Inequality (Gini) in India 1983-2007/08

Year	**1983**	**1993/94**	**1999/00**	**2004/05**	**2007-08**
Measure,Nominal					
Uniform Recall (30 days)	0.326	0.327	0.323	0.368	
Mixed Recall (30/365 days)	0.304	0.303	0.323	0.351	0.348
Adjusted to National Accts	0.360	0.378	0.365	0.434	0.424
Measure,Real					
Uniform Recall (30 days)	0.319	0.304	0.290	0.328	
Mixed Recall (30/365 days)	0.304	0.284	0.298	0.313	0.312
Adjusted to National Accts	***0.354***	***0.355***	***0.332***	***0.398***	***0.378***

Notes: See text and Appendix I for details of construction of the adjusted to national accounts estimates of inequality. Real estimates are obtained by deflating per capita consumption by the relevant rural or urban state poverty line.

Trends in *real* inequality (nominal expenditures adjusted for inter-regional price differences) suggest a very different story. *Inequality has broadly stayed constant throughout the 30 year period since 1983*. In 1983, real Gini was estimated to be .304 and it dipped to a

[2] While data for both the uniform and the mixed recall method are presented, the discussion pertains to only the estimates of the new official mixed (or 30/365 day) method

low of .284 in 1993/94. That was a 7 percent improvement in inequality.[3] Since then, and including the high growth period since 2003/4, real inequality increased to .312 in 2007/8 (and the same level in 2004/5). That represents no more than a 3.5 percent increase since 1983. The importance of correcting for price level differences is illustrated by this difference in results. Far from India having a problem with non-inclusive growth a la China, it is likely the case that the Indian model of growth has delivered relatively much more to the poor, *ceteris paribus*, than China.

The next section will go into some of the possible explanations for the inclusive nature of growth in India. But first, an exploration into another disturbing aspect of consumption data in India and hence potential problems in any conclusions pertaining to inequality change and/or inclusive growth. This exploration has to do with the last row entry under each bloc of inequality estimates in Table 3 – "adjusted to national accounts".

There are two estimates of average per capita consumption in India, or any other country. The first is that obtained from household surveys (S) such as the NSS and the second is that obtained from national accounts (NA). Until the late sixties, the two estimates were near identical and this was a reflection of the fact that the national account estimates of consumption were *derived* from NSSO survey estimates. The survey to national accounts ratio (S/NA) was close to a 100 percent.

The S/NA ratio started to decline in India from the mid-seventies and in the 2004/5 large sample survey of 125,000 households it reached a (then) record low of 49.5 percent i.e. more than half of total consumption was completely missed and unaccounted for by the survey. The 2007/8 thin sample survey (50 thousand households) shows this estimate falling further to a new low, 47.2 percent. (Table 4). The reasons for this precipitous decline are beyond the scope of this paper but it is obvious that not-accounting for this decline can lead to serious errors of interpretation pertaining to growth, inclusive or otherwise.

Table 4: Survey to National Accounts Ratio in India

Year	Survey	National Accounts	Survey/NA Ratio
1972/73	48.4	56.3	86.0
1973/74	56.9	66.3	85.8
1977/78	75.1	89.7	83.7
1983	123.4	152.9	80.7
1987/88	181.9	233.9	77.8
1993/94	333.5	539.6	61.8
1999/2000	586.9	1057.5	55.5
2004/5	728.8	1472.3	49.5
2007/8	976.6	2068.7	47.2

Notes: The survey and NA figures are in current rupees per person per month.
The current NA figures are taken from the NA estimates prevailing at the time of the survey.

[3] Note that the amore appropriate inequality measure, adjusted to national accounts, does not show any decline during the period 1983 to 1993/94.

There are natural differences between the two sources because of differences in definition, coverage (e.g. institutions are part of NA but not of surveys[4]), measurement (survey consumption is measured directly while NA consumption is often a residual) and prices. These differences fail to account for more than a small fraction of the two means, say about 5 percent or so. Indeed, differences in population estimates (between NSS and NA) alone suggest a discrepancy larger than 5 percent. The differences in *growth* of survey or NA consumption are even smaller (since the differences in levels are likely to persist). Hence, while one can expect divergences in levels of NA and survey consumption, there is very little reason to believe that there should be divergences in NA and survey growth rates. And it is the latter divergence that is all too critically important for understanding *trends* in inequality and poverty.

Several explanations are possible for explaining the residual "true" difference between surveys and national accounts. First, it could be the case that the national account estimates have a systematic upward bias, and an increasing error proportion i.e. the detailed NSS surveys (with questions even on salt consumption!) are broadly "correct" and the NA estimates are in error. Scholars have pointed to the FINSIM category (banking services like use of checks and insurance services) as a major source of missing consumption in surveys. But FINSIM accounted for less than 2 percent of total consumption in 2004/5, and less than 1 percent in 1993/94.

An alternate possibility is that the NSS data are underestimating "true" consumption. The declining trend in S/NA ratios is indicative of this possibility, as is the fact that this decline in S/NA ratios has been observed in most countries, especially during the globalization period post 1980.[5] A discussion of the causes behind this decline is beyond the scope of this paper. But if the assumption is made that survey data are broadly incorrect, then there is a problem of interpretation of data on both the level and trend in inequality. In other words, no conclusion can be made on the nature of inclusive growth.

Because it all depends on who and what is being missed by the surveys. If the rich are being missed in increasing proportions, then the distribution will have a bias towards showing more equality than is actually the case. A similar effect occurs if the rich are not being missed in proportions, but in the magnitude of their consumption i.e. less of their consumption is being tabulated. Thus, there are very few reasons to suggest that the level of measured inequality is less than true inequality.

Growth and poverty calculations, and therefore conclusions about inclusive growth, are intimately related to knowledge of which estimate of mean consumption is "accurate". The effect the declining S/NA ratio has on growth and poverty calculations can be illustrated as follows. Assume for a moment that the S/NA ratio observed in 1987/88 is broadly correct. This means that about 22 percent of national accounts consumption is missed and does not accrue to anybody, rich and poor alike. It is an unrealistic assumption, but it does illustrate the underestimate of growth, and therefore, the level of income, at anytime subsequent to the "normal" year 1987/88. Between this base year and 2004/5 (both large sample surveys), the S/NA ratio declined from 77.8 to 49.5 percent. Real NSS consumption during these years grew at a rate of 1.1 percent a year; national accounts data real consumption grew at more

[4] It has been speculated (see Ravallion (2000)) that the non-government organizations (NGO) population in India maybe causing a significant part of the divergence between survey and NA means, and growth rates. As pointed out in Bhalla (2003c) the contribution of this factor to overall divergence in survey and NA means is very, very small.

[5] See Bhalla (2002) for a detailed discussion of these issues.

than twice that rate, approximately 2.8 percent per annum. So approximately 1.7 percent per year, or a cumulative 34 percent, was no longer accruing to individuals according to NSS data. Again, the emphasis is on growth being missed, not the level. None of the arguments in favor of using NSS data as more reliable have to do with growth being missed, and not certainly of this magnitude.

Adjusting survey means to national accounts means – a proposed method

How can an estimate of "true" inequality be arrived at? One method is to assume that the estimate of NA total consumption for a broad category of individual items is accurate. The NSS surveys partially capture this total; some items are captured with less error e.g. cereals, while some items are measured with greater error e.g. consumer durables. But the incorrect NSS estimates can be used to derive the missing consumption for various individual items.

A suggested method for matching NSS data to the NAS data is to break up total household consumption into 12 food and 15 non-food categories. For each category e.g. cereals and pulses, fruits and vegetables, clothing and footwear, education and medical care etc. the survey mean is matched to the national accounts mean. For example, in 2004/5, NSS per capita per month consumption of cereals and pulses was Rs. 104; the NAS estimate was Rs. 128. This Rs. 24 error can be allocated to each individual household on the basis of its revealed consumption. If each *individual* household's consumption is multiplied by a factor of 1.23 [the ratio of 128 and 104] then all the missing consumption is allocated and accounted for. For education and medical care, the ratio in 2004/5 was a larger 1.63. Note that this procedure allocates the missing consumption on a proportionate basis to actual consumption; if actual consumption was zero, so would adjusted consumption be zero; if actual consumption is small say Rs. 2 per month, the adjusted consumption would also be small e.g. Rs. 3.26 for education and medical care. For a rich household with measured consumption of Rs. 100, the adjusted level of education and medical care consumption would be Rs. 163.

This method, applied individually to all 27 aggregate items, generates a consumption level equal to national accounts consumption[6]. With these adjustments, the effect on the distribution of consumption is known – it is likely to be higher than measured consumption inequality. However, the effect on change in inequality is unclear, *a priori*.

Inequality trends revisited

Figures contained in the last row of Table 3a can now be explained. This row contains estimates of nominal and real consumption inequality with consumption means matched to national accounts means. Table 3b reproduces real inequality data from Table 3a, and adds two other well known inequality indices – the Theil index and the Atkinson index for a risk aversion parameter, α, equal to 1. Thus for real inequality, there are six indices for the period 1983 to 2007/8: three different indices for NSS data as is, and three for NSS data adjusted for the discrepancy with national accounts. Somewhat strikingly, no matter what the definition or the index, the strong result which emerges is that consumption inequality has stayed near constant for the long 25 year growth period from 1983 to 2008. Thus, even according to adjusted consumption *there is no trend in inequality in India*. Gini inequality was .354 in 1983, which dipped to .332 in 1999/00. The 2007/8 level is a few Gini points below the peak level of .377 observed in 2004/5. Whether this decline will persist with the yet to be released 2009/10 large sample data is unknown - what is revealing is that to-date, there has been little variation in real inequality in India, and that there has been a mild trend *downward*. Why this

[6] See Appendix I for details on the methods used to generate this equivalence

unusual result is possible, and perhaps should be expected, is examined in the sections on education and the middle class.

While comparative data needs to be explored, it is likely the case that this near constancy is unusual, especially given the "buzz" of the conventional wisdom that inequality increases with growth and/or that Indian inequality has sharply worsened. An additional result that emerges is that regardless of the index used, consumption inequality in India, adjusted with respect to national accounts, is about 20 percent *higher* than that as measured by NSS. This is a large difference; unfortunately, comparable calculations for other countries are not available and therefore it is difficult to state whether India's inequality ranking moves by much after the "matching" adjustments.

The next few sections discuss the possible reasons for this striking result and also introduce, and discuss, and interpret, the data and results on inequality in growth. A constant level of real inequality is consistent with a myriad set of movements in the Lorenz curve. Disaggregation by real growth on a percentile basis (recall that a Lorenz curve describes the cumulative shares of income for percentiles) reveals patterns of growth at the micro level.

Table 3b: Real Inequality Indices in India, 1983-2007/8

	1983	1993/4	1999/00	2004/5	2007/8
NSS data - unadjusted original					
Gini	0.304	0.284	0.298	0.313	0.312
Theil (mean log deviation measure)	0.153	0.132	0.146	0.160	0.159
Atkinson (inequality aversion parameter=1)	0.142	0.124	0.136	0.148	0.147
NSS data adjusted to Natl. Accts					
Gini	0.384	0.368	0.327	0.377	0.347
Theil (mean log deviation measure)	0.247	0.229	0.178	0.242	0.198
Atkinson (inequality aversion parameter=1)	0.219	0.205	0.163	0.215	0.180

Source: National Sample Surveys; all except 2007/8 are large sample surveys

Inequality in growth

The Gini is a complex inequality measure – simpler measures include well known ratios like the growth of the top 20 percent relative to the bottom 20 percent etc. In Bhalla (2002), a method based on Kakwani was used to estimate the Lorenz curve for different years of survey data. Repeating this procedure, real consumption levels (2004/5 rural Tendulkar prices as the deflator) for each percentile are obtained. These data allow for tests of relative growth in consumption at different levels of the distribution.

Two sets of results are presented with regard to the analysis of inequality in *growth.* The inequality pattern reported in Table 3 relates to inequality at a point in time; the main interest in this paper is to evaluate the growth experiences among the poor and rich. This can be evaluated by estimating growth inequality, a procedure which requires an estimate of the growth differences at each percentile or ventile (5 percentile) level.

With these estimates, for a population of size n, with a sequence of values y_i, $i = 1$ to n, the mean difference MD can be computed as:

$$MD = \frac{1}{n(n-1)} \Sigma_{i=1}^{n} \Sigma_{j=1}^{n} |y_i - y_j| .$$

where y represents the growth in real consumption. If the mean difference, MD, is divided by the mean of the differences, one obtains the relative mean difference, and this can be shown to be equal to twice the growth Gini.

Table 5 reports the three statistics (arithmetic mean, mean difference, and the relative mean difference) for growth rates in different time periods. The most unequal growth performance was between 1983 and 1993/94 – indeed, the Gini reached its lowest point in 1993. The growth period 1983 to 2007/8 shows the most equality in growth rates – a Gini of only 0.0579.

Table 5: Calculations of inequality in real growth (NSS unadjusted data)

	Mean difference in growth	Mean growth in consumption (%)	Implied Gini
Period			
1983 to 2007/8	4.49	38.8	0.0579
1983 to 2004/5	4.44	28.1	0.0792
1983 to 1993/94	4.93	13.3	0.186
1993/4 to 2007/8	4.17	25.5	0.0817

Notes:

Charting growth inequality

The next few pages present results on *growth* with the *percentile* as the unit of observation. The poorest percentile has very little absolute consumption level, the richest percentile a very high level. Interest here, however, is in terms of growth. Discussions of inequality inevitably centre around the phrase "the rich are getting richer, the poor are getting poorer". This phrase is not a reflection of inequality at a point in time, but of change in inequality over time. And change in inequality is nothing but an assessment of growth at each percentile level (the Lorenz curve). So is it the case that the rates of growth of consumption of the poor have been considerably less than the rates for the rich, as commonly presumed and believed? Or is it the case that the rates of growth of the poor and the rich have been the same, as a casual inference of the data on trends in real inequality would suggest? Or is it the case that the rate of growth of consumption of the poor has been higher than that of the rich? This last result is possible and consistent with flat real inequality if both the poor and the rich grow faster than the middle.

Various charts and tables outline the picture of growth inequality. Charts 2a and 2b reveal the growth in real per capita consumption for each ventile for the two different estimates of real growth: unadjusted NSS data, 1983 to 2007/8 and NSS adjusted to national accounts growth, respectively. Charts 3a and 3b repeat the exercise for the growth according to just the large sample surveys, 1983 and 2004/5. The red horizontal line in each graph shows the average gain, while each bar represents the actual growth for each ventile.

Chart 4 tries to assess as to how much better those at the bottom did relative to the top. Rather than take the percentile growth for each percentile, these charts are analogous to the

mean difference estimate outlined above. In terms of the MD formula documented earlier, what is reported in Chart 4 is the difference in y_i and y_j when i goes from 1 to 50 and j goes from 100 to 50.

The difference in growth data are organized as follows – the first percentile contains the *difference* in growth rates of the first and 100th percentile; the second contains the difference between the 2nd and 99th percentile and so on. This chart is an indirect attempt at documenting inequality in growth rates rather than the conventional method of documenting inequality in levels.

Chart 2a: Pattern of growth in real NSS unadjusted consumption, 1983 to 2007/8

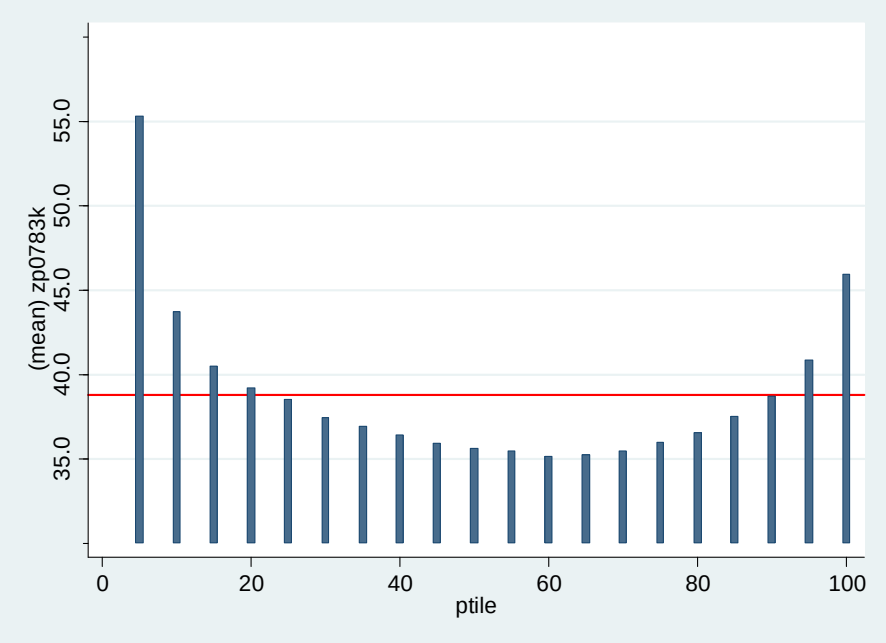


Chart 2b: Pattern of growth in real NSS consumption adjusted to NA, 1983 to 2007/8

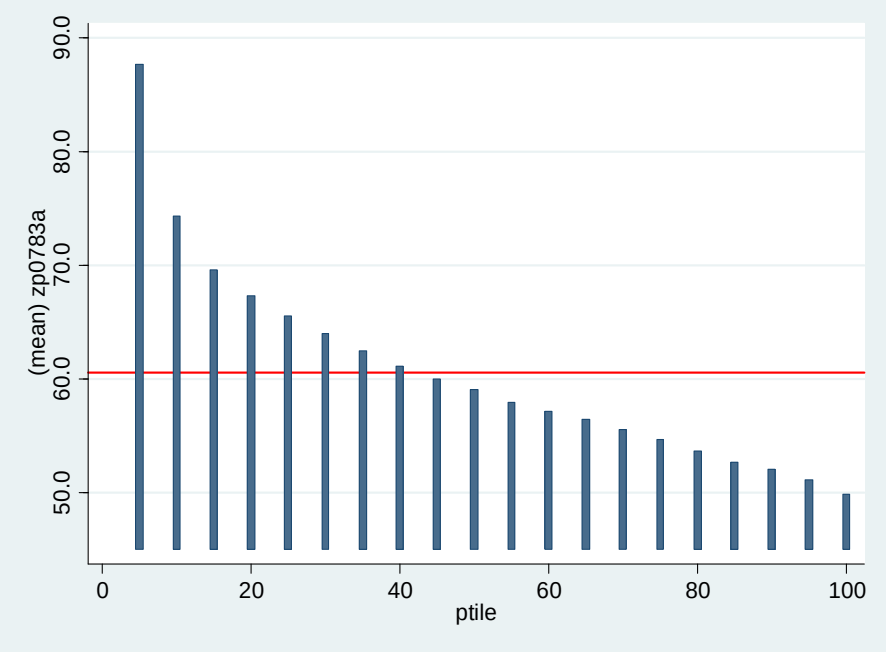


Chart 3a: Pattern of growth in real unadjusted consumption, 1983 to 2004/5

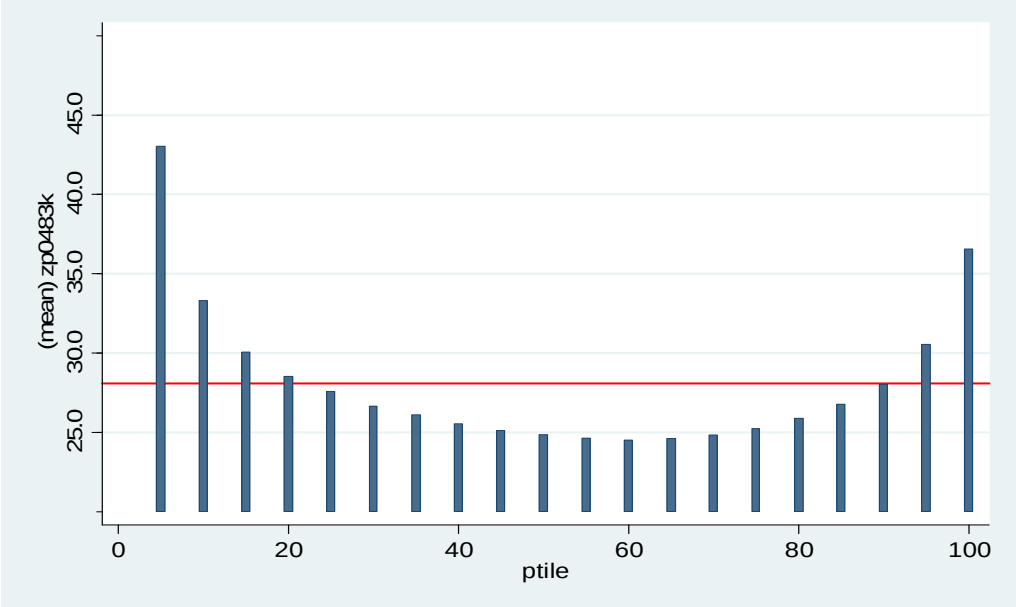


Chart 3b: Pattern of growth in real NSS consumption adjusted to NA, 1983 to 2004/5

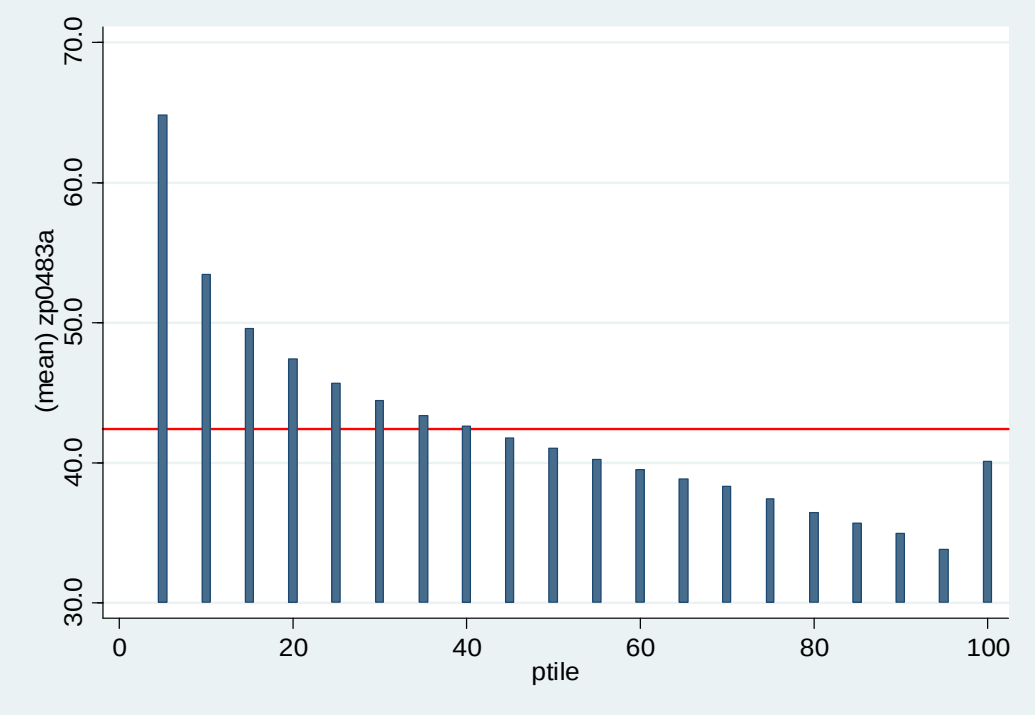


Chart 4a: Pattern of growth in each difference percentile, 1983 to 2004/5
NSS data unadjusted

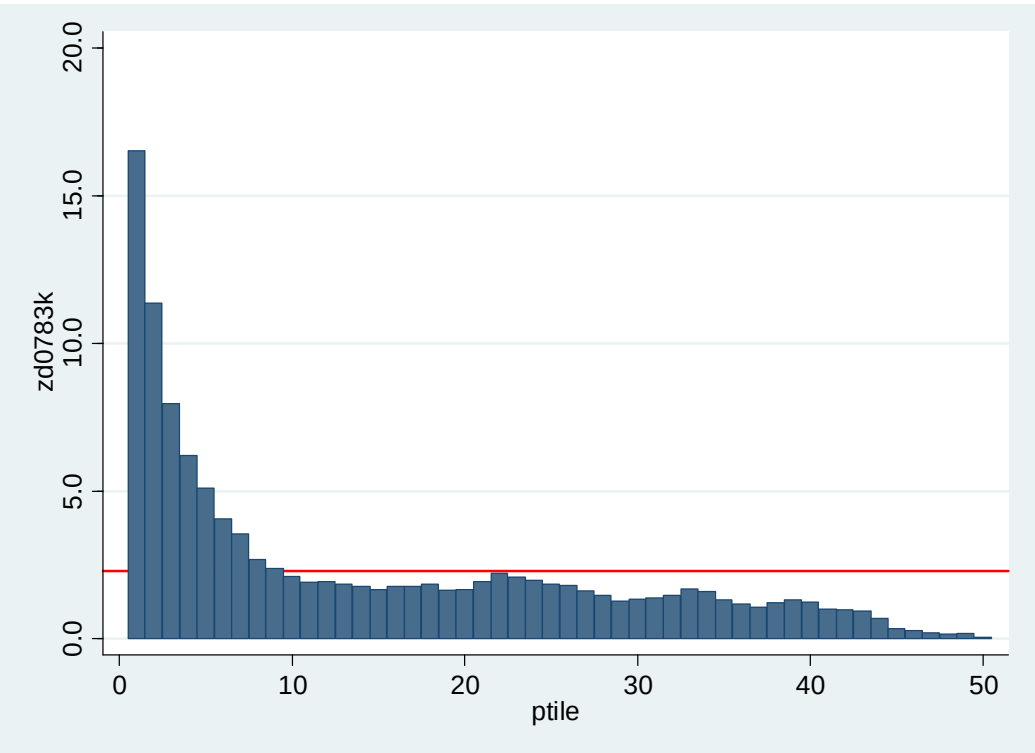
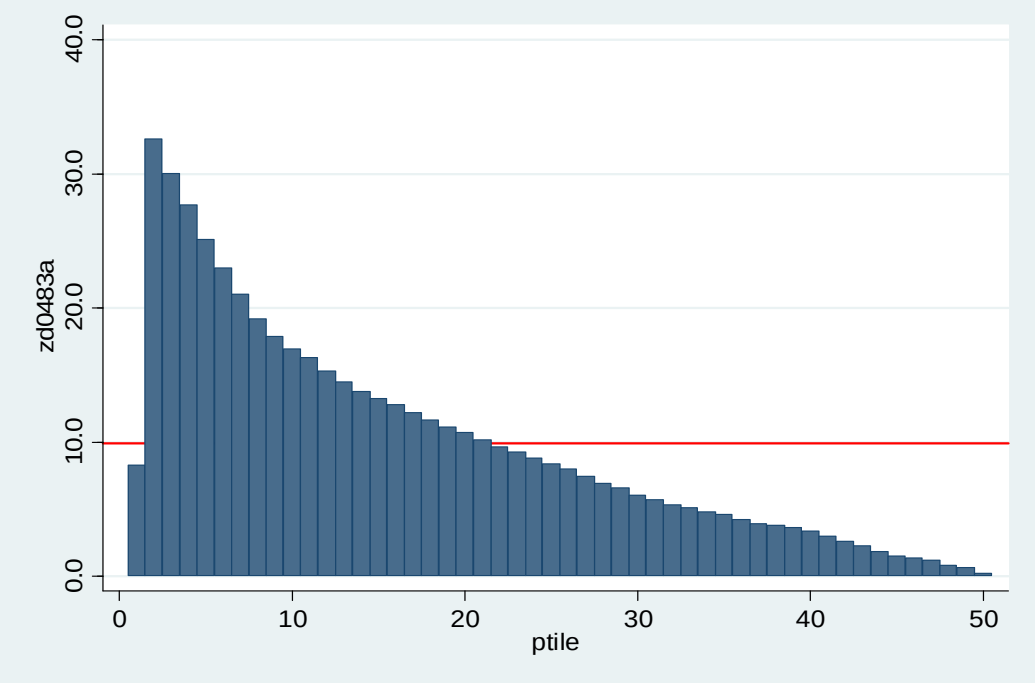


Chart 4b: Pattern of growth in each difference percentile, 1983 to 2004/5

NSS data adjusted to national accounts



Percentile growth charts – an interpretation

Charts 2 and 3 reveal the same story – a U shaped curve with both the bottom and top growing faster than the middle, a pattern consistent with the constant inequality story noted earlier.

Chart 4 reveals an even more equalizing pattern – regardless of adjustments to the data, almost every percentile less than the median 50th percentile grows faster than its corresponding richer percentile. Recall that the data are presented in pairs with the first percentile figure representing the difference in growth rates of the 1st and 100th, the second the difference between the 2nd and 99th and so on. Somewhat surprisingly, the data show a consistent pattern of each of the below median poorer percentiles growing faster than the growth experienced by their richer "cousins".

Collecting level and growth results on inequality, and trends in inequality

The results are consistent with the following three conclusions. First, that consumption inequality in India is about 20 percent higher than conventional interpretations would suggest. It bears emphasis that this higher inequality level is derived after "matching" survey expenditures to national account expenditures. The adjustment result suggest that a larger fraction of expenditures of the rich are missed by the surveys. There are two kinds of measurement errors that occur in sample surveys (under the assumption that the aggregate indicated by the NA is correct). The first error is due to people being left out of the surveys altogether; the second error is that those included in the surveys understate their actual consumption. Regardless of the source or likelihood of each error, the adjustment procedure results in an "accurate" reflection of the consumption pattern of the entire population. Unfortunately, this comprehensive measure of inequality is not comparable to other estimates of inequality in India or elsewhere. Only an analogous "filling in the gaps" method for other countries can make *adjusted* inequality estimates comparable.

The second strong and consistent result is that regardless of the data, or the adjustments, or the inequality measure, real inequality in India has stayed constant over the last 25 years. Given the robustness of this result, it is somewhat surprising that it hasn't been noticed enough, or discussed. This result is not a function of the new 2007/8 data analyzed in this paper; nor is it a function of the "small sample" nature of the 2007/8 survey. The result occurs with just the large sample surveys since 1983, and for a consistent definition of consumption (mixed recall, with most consumption items as 30 days and durable consumption as 365 days). Indeed, the result also occurs for the traditional uniform recall (all questions pertaining to 30 day consumption).

The third conclusion pertains to growth inequality. These data on growth inequality present a somewhat different picture than the popular wisdom about inequality change in India. According to the percentile distribution of growth, there is a pronounced trend towards equality with the bottom 20 percent of the population, the poorest, showing considerably higher growth than the average, and the growth among the rich. These data strongly support the inference and conclusion that whatever the cause, growth in India has been more inclusive than heretofore believed.

How has this inequality not changing, or even improving, result possible? It is if one correctly interprets the large structural change occurring in India. The determinants of constant inequality, despite high growth, are examined in sections pertaining to education, the middle class, and structural change. But first, some discussion of poverty trends in India.

Section 7 – Poverty Trends in India, 1983-2008

The results on consumption as well as education inequality have been discussed. An important attribute of inclusive growth is that absolute poverty be eliminated. Unlike the name, the poverty line defining absolute poverty is not absolute. The popular PPP $ a day 1985 prices international poverty line was equal to PPP $ 1.27 in 1993, that being the increase in the US price level, a numeraire for all PPP calculations. But the 1993 poverty line was PPP $ 1.08. Between 1993 and 2005 the US price deflator increased by 28 percent; so the new 2005 PPP $ a day poverty line should have been $ 1.38 (1993 reference level) and $ 1.75 (1985 reference level). The "official" World Bank estimate of the poverty line in 2005 – PPP $1.25.

In contrast, the Indian poverty line has stayed constant over time. Contrary to popular belief, the Indian poverty line, like all poverty lines, is based on food consumption in a particular year but never *updated* on the basis of food consumption. For example, the US poverty line was based on a 1964 consumption basket. It was observed that the poor, defined according to various characteristics, spent 33 percent of their income on food. The updates to the poverty line do not keep this ratio constant; the updates are based on movements in the overall consumer price index.

The case of India is identical to the US. The poverty line of Rs. 15 per capita per month in rural areas and Rs. 18 in urban areas, 1973-74 prices, was reached at after looking at food consumption. This level of food consumption involved a certain number of 'adequate" calories. In the last 40 years, food consumption patterns have changed. As development proceeds, in the first stage, the movement is from calorie rich foods (cereals) to calorie poor foods (fruits and vegetables). Urbanization also dictates less need for calories; and being

better off means eating, out of choice, more expensive calories e.g. meat. So the poverty line is not and should not keep constant calorie consumption. The Indian poverty line is updated, like in the US and every other country in the world, on the basis of overall consumer price indices, and *not* food or calorie price indices.

Until just a few years ago, the Indian poverty line was identical to the PPP $1.08 World Bank poverty line.[7] Recently, however, an expert-level committee headed by Prof. S Tendulkar submitted a report which effectively raised the poverty line by about 18 percent with most of the increase coming in the rural areas. For the new 2005 PPP data, the Tendulkar poverty line is equal to PPP $ 1.12 per day, some 10 percent below the new international poverty line of $1.25.

Table 4a presents state level results for poverty as measured by the NSS surveys and the level of poverty according to the enhanced Tendulkar poverty line; Table 4b reports identical data for the old official poverty line. Poverty decline has been near uniform across the states. The average pace of decline has been 31 percentage points; the poorer Bimaru states show a decline of 25 percentage points.

The results underline the dramatic improvement in poverty alleviation during the recent high growth period. Regardless of the poverty line used, or the region, poverty has declined at about three times the earlier pace. For the old official poverty line, the head count ratio of poverty declined by 0.9 percent a year for the twenty two year growth period of 1983 to 2004/05; in the subsequent three years the rate of decline accelerated to 2.3 percentage points (ppt) per annum. For the higher Tendulkar poverty line, the rate of decline accelerated from -1 ppt a year to -3.1 ppt a year.

Note that regardless of the poverty line used, the poverty level in 2007/8 is about half that prevailing in 1993. The level of poverty indicated by the 2007/8 NSS data is 14.8 and 27.9 percent, old and new lines respectively. To put these numbers in perspective, the Millennium Development Goals target was to reach half the 1990 level by 2015. The NSS data suggests that the target was reached about a decade earlier. It needs to be emphasized that these poverty figures are as the raw figures indicate i.e. *no adjustments have been made to the NSS data*.

Earlier it was documented that the steep decline in the S/NA ratio was near unprecedented, and disturbing. Given that over half the consumption according to national accounts is left out, it is reasonable to ask as to what a realistic estimate is of consumption and poverty in India. If the growth rate in mean consumption is as per national accounts, and the level of S/NA ratio is as per the 1987/88 data i.e. only 78 percent, then about 33 percent of increase in mean consumption is not present in the 2007/8 data. This extra 33 percent would imply a Tendulkar line poverty level of less than 13 percent in 2007/8 and less than 5 percent poverty according to the official poverty line. What this suggests is that India needs to both improve the collection of consumption data and to further increase the Tendulkar poverty line by 25 percent. This new poverty line would yield that about 20 percent of the Indian population was absolutely poor. The bottom fifth can and should become the new norm of absolute and relative poverty in India.

[7] As discussed in Bhalla(2002), the Indian poverty line was very likely the basis for the international poverty line

Table 4a: Poverty and poverty gap in states of India, 1983 - 2007/8

	Poverty - Tendulkar line				Poverty gap			
	Percentage of population				Percentage distance from line			
	1983	1993	2004	2007	1983	1993	2004	2007
State								
Andhra Pradesh	58.8	43.9	29.7	18.8	28.3	23.1	23.2	16.9
Assam	64.8	60.5	34.8	27.3	23.4	22.3	20.2	17.6
Bihar	76	68.8	54.4	48.5	33.9	27.9	23.7	20.4
Delhi	26	12.3	13	7.3	19.9	22.5	18.4	20.7
Gujarat	53.8	43	31.8	21.2	25.4	24.2	21.3	16.6
Haryana	37.5	37.3	24.1	18.3	21.8	22.2	19.3	21.7
Himachal Pradesh	38.4	45.4	22.7	12.4	22	21.9	16.3	17.4
Jammu & Kashmir	53.1	23.7	13	6.6	19.8	15.8	13.8	16.9
Karnataka	50.5	42.4	33.5	15.5	29.4	24.5	21.2	19.8
Kerala	53.2	35	19.7	10.2	28.4	23.5	22.4	15.8
Madhya Pradesh	62.1	50.3	48.7	37.4	29.2	24.7	23.2	19.8
Maharashtra	52.5	45	38	23.5	30.9	26.1	24.7	21.7
Orissa	77.4	65.6	57.1	45	37.9	26.5	27	20.5
Punjab	32.5	28	20.9	16.7	24.8	19.1	17.8	15.9
Rajasthan	48	38.2	34.3	29.8	27.4	20.8	18.4	16.3
Tamil Nadu	61.4	44.8	30	14.7	33	25.2	19.9	17.4
Uttar Pradesh	58.8	50.5	40.8	37.4	28.5	24.8	22.1	19.2
West Bengal	64.6	48.1	34.4	26.9	33	22.7	20.8	18.7
India	**58.5**	**47.8**	**37.1**	**27.9**	**29.8**	**24.1**	**21.5**	**18.5**

Table 4b: Poverty and poverty gap in states of India, 1983 - 2007/8

	Poverty - Official poverty line				Poverty gap			
	Percentage of population				Percentage distance from line			
	1983	1993	2004	2007	1983	1993	2004	2007
State								
Andhra Pradesh	30.1	18.5	11.5	5.5	28.7	26.4	29.8	26.1
Assam	36.4	32.6	15.3	10.9	18.2	17.1	14.9	14.4
Bihar	59.3	49.9	33.3	27.9	28.2	22.3	18.2	15.7
Delhi	22	9.4	8.8	6.5	19.6	23.3	19.9	19.1
Gujarat	26	19	11.8	4	19.8	21	18.5	17.6
Haryana	17.9	19	9.8	8.9	18.7	18	16.1	16.1
Himachal Pradesh	16.3	19	6.7	4.1	19.7	17.7	13.3	13.2
Jammu & Kashmir	22.1	6.7	4.6	0.9	17	14.7	15.8	22.7
Karnataka	35.9	26.4	16.9	8.2	28.6	27.2	28.3	28
Kerala	37.4	21.9	11.4	4.5	25.8	21.6	23.1	15.6
Madhya Pradesh	47.1	35.5	32.4	21.2	25.9	25	27.2	25
Maharashtra	36.4	30.8	25.3	14.3	23	25.7	29.5	26
Orissa	64.7	44.5	40.1	25.9	30.5	23.3	26.4	19.9
Punjab	12.6	8.3	4.9	4.4	21.7	15	13.4	10.1
Rajasthan	32.4	20.6	17.7	12.9	25	19.4	18.4	17.8
Tamil Nadu	49.3	31.1	17.3	9.2	29.3	25.4	20.7	20.1
Uttar Pradesh	44.3	36	25.5	21.4	24.9	21	19.9	17.5
West Bengal	52.2	31.2	20.5	14	29.8	18.3	16.7	14.7
India	**41.6**	**30.4**	**21.8**	**14.8**	**26.5**	**22.4**	**22.3**	**19.7**

How have different groups fared

Poverty levels and change for different socio-economic groups are described in Table 5. The group with the highest poverty levels are the schedule tribes (STs). In 2007/8, nearly half (45.3 percent) of the ST population was poor, compared to the national average of 27.9 percent. In 1983, more than 80 percent of this group was poor. The rate of decline in poverty of this group, at 5.8 percent per annum for the recent period 2004-08 is the *highest* for any socio-economic group; for the longer 1983-2008 period, poverty in this group declined at 1.4 percent per annum, the highest for all groups as well.

Data on "who is where" in the distribution also suggests that growth has spread to all sections of society *and* that there has been a fair degree of upward mobility. In 1983, over 40 percent of SCs were in the poorest quintile (bottom 20 percent). This fraction had reduced to 35 percent in 2007/8. For the other group (non SC, non ST and non Muslim), there is an increase in the fraction residing in the first quintile – from 14.9 percent in 1983 to 17.3 percent in 2007/8.

Table 5a: Poverty and poverty gap in states of India, 1983 - 2007/8

	Poverty - ***Tendulkar*** line				Poverty gap			
	Percentage of population				Percentage distance from line			
	1983	1993	2004	2007	1983	1993	2004	2007
Social category								
Dis-privileged	72.1	62.4	50.6	38.7	32.8	26.6	23.6	19.9
- SC	72.6	63.7	51	39.9	33.9	26.8	23.1	20.2
- ST	80.6	68.9	62.7	45.3	36.3	28	26.5	19.7
- SCST	75.2	65.3	54.1	41.5	34.8	27.2	24	19.9
- Muslims	64.8	55.6	43.6	32.6	28.4	25.4	22.9	20.3
Privileged	51.9	39.8	29.3	20.4	27.8	22.3	19.9	16.8
All groups	58.5	47.8	37.1	27.9	29.8	24.1	21.5	18.5

Table 5b: Poverty and poverty gap in states of India, 1983 - 2007/8

	Poverty - ***Official*** line				Poverty gap			
	Percentage of population				Percentage distance from line			
	1983	1993	2004	2007	1983	1993	2004	2007
Social category								
Dis-privileged	55.6	43	31.7	21.9	28.8	23.6	23.9	20.5
- SC	56.1	43	30.6	22.5	29.5	24.2	23.3	20.5
- ST	62.8	46.3	39	23.4	30.5	23.7	25.3	19.5
- SCST	58.3	44	32.8	22.8	29.9	24	23.8	20
- Muslims	49.2	40.7	29.5	19.6	26.4	22.8	24.4	21.9
Privileged	34.7	23.5	16	9.8	24.7	21.4	21	18.6
All groups	41.6	30.4	21.8	14.8	26.5	22.4	22.3	19.7

Section 8: Direct Inclusive Growth Policies

There have been many public policy efforts to reduce inequality, and poverty, in India. Prominent social interventions for inclusive growth programs have been food at subsidized prices for the poor, reservations in education and jobs for the traditionally socially and economically disadvantaged (the scheduled castes (SCs) and scheduled tribes (STs)), and food for work programs.

In 1985, Rajiv Gandhi, a young Prime Minister of India (and son of Mrs. Indira Gandhi) announced, after a daylong meeting with several young bureaucrats from the Indian Administrative Service[8], that he felt that Indian institutional non-growth poverty reduction policies had failed miserably in reaching the poor. In particular, he concluded, based on estimates given to him by the officers in the field that only about 15 percent of every rupee

[8] Another institution inherited from the British and patterned after the famed British Civil Service. Yet another example of high institutions in India and low economic performance.

spent for the poor through various policies meant to alleviate poverty e.g. the public distribution system of food grains, the food for work programs etc, actually reached the poor. He did not offer any evidence of the sort that economists would require. The empirical evidence available today would characterize Mr. Gandhi as a wild eyed optimist.

Table 6 documents some evidence on governance in India in 1999/2000. For a poor country, food distribution is a very important part of government policy to alleviate poverty. The institutional mechanism set up by the government is the public distribution system (PDS). This system requires an elaborate government machinery to first procure grain and rice from the farmers (cannot rely on individual agents or the market to procure food since the market is a "bad" institution), then another government machinery to provide this procured food to government "fair" price shops, from whom the poor people buy food at a discounted price. The poor people have to be in possession of an identity card to make them eligible to receive subsidized food. An elaborate and by all accounts a meaningful institutional structure. Not obvious why this policy should be preferred to a policy that just gives cash, or food stamps, to the poor. When asked, the Indian authorities claim that cash to the poor would mean liquor to the poor.[9]

Perhaps the authorities are right – the elaborate system most likely has a minimum of "leakage". Most likely the rich do not obtain this subsidized food, and the poor cannot purchase extra liquor from the savings made possible by all the food purchased at a discounted price. However, in his 1994 study, Kirit Parikh found that, based on the 1986-87 NSS survey, "cereals distribution in the states is not particularly targeted to the poor. In fact, in almost all the states, persons belonging to the bottom 70 percent of the population get more or less the same amount...*For every rupee spent less than 22 percent reach the poor in all states, excepting in Goa, Daman and Diu where 28 paisa reach the poor*" (p. 14-15, emphasis added].

Some fifteen years later, there is not much improvement. According to the large 1999/2000 NSS survey, the proportion of poor households who actually accessed rice from the PDS was only 11.3 percent. In other words, of the eligible poor population, only 11 percent was able to able to buy the subsidized rice. For wheat, the proportion was even smaller – only 5.7 percent. Further, only 29 percent of the wheat and rice that the government claims it distributed via the public distribution system was actually distributed. This low fraction means that 70 percent of the food is unaccounted for – not accruing to either the poor or the rich.

The mid-day meal program for school children is yet another government program with considerable public support. Indeed, the government imposed an education cess in 2005/6 and 2006/7. This additional tax revenue was meant to provide for education for the poor, as well as to expand school mid-day meal programs. The NSS data on mid-day meals is revealing. The government claims that 99 million school children were covered in 1999/2000, and that 2376 million meals were delivered. According to NSSO, the success ratio, according to either criterion, was less than 12 percent.

Yet another "in the name of the poor" government program is to provide jobs to the poor. This has recently been institutionalized in the form of an "Employment Guarantee

[9] It is another story that there isn't enough liquor in India to satisfy the demand emanating from the 1 percent to 2 percent of GDP that India spends on its food redistribution policy.

Scheme", a program with annual expenditures of two-thirds of 1 % of GDP. The first such employment guarantee scheme was started in the state of Maharashtra in 1973, so states and governments in India have considerable experience and expertise with this government program or "institution".

The survey data, by definition, provides an estimate of the number of jobs, the number of meals, etc. Earlier, it was documented that the NSSO surveys were problematic in that less than 50 percent of national accounts consumption was recorded. For a total consumption estimate, these low ratios are a record of sorts, since cross-country experience is that *income* survey estimates tend to be in the 40 to 60 percent range. Consumption is easier to track, and such estimates are often above 70 percent.

It is also the case that recall of whether in the previous week one had worked in an employment guarantee scheme is likely to be more accurate than what the total consumption was during the previous week, or month, or year. So while there is measurement error in the NSSO estimates of food purchase, mid-day meals, and work in a public works program, it is highly unlikely that the under-estimate is as large as a hundred percent i.e. a capture ratio of only 50 percent. But what the NSS data show is that in several programs, the capture ratio is considerably less than even the extreme 50 percent, and that often these ratios are less than the Rajiv Gandhi Index of inefficiency of 15 percent.

Table 6: Governance in India, 1999/00

Service delivery	**Government**	**NSSO**	**Rajeev Gandhi index of govt. efficiency**
Public distribution of food			
% poor household accessing rice		11.3	
% poor household accessing wheat		5.7	
Consumption of PDS			
Wheat and rice distribution via PDS	101.8	29.2	28.7
Mid day meal program			
No of children covered (in millions)	99	9.7	9.8
No. of meals delivered (in millions)	2376	266	11.2
Employment programs			
Man days created, (crores)	54.7	32	58.5
Employment, poor (crores)		7.8	14.3

Source: NSSO consumer expenditure survey 1999/00; various Governments of India documents on public programs.

NREGA 2007/8 – An evaluation

The traditional "food for work" program in India was rechristened and replaced by an Act of Parliament. Employment became a right and the National Rural Employment Guarantee (NREGA with the A for the Act) was launched when the present government headed by Ms. Sonia Gandhi and Dr. Manmohan Singh came to power in May 2004. This Act promised to provide jobs for at least 100 days to at least one member of each poor household in rural India. The job was meant to build rural assets like irrigation canals, roads, sanitation, water supplies, etc. For the current fiscal year, close to Rs. 40000 crores (or $ 10 billion) have been allocated to this program.

The food for work program which this program replaced had been subject to criticisms of corruption and fake payments. People who did not exist were receiving payments. One of the main architects of the NREGA program, Jean Dreze, wrote an op-ed in 2007 entitled "The Loot for work program". To date, very few analysis of NREGA exists, and none based on an independent evaluation. NCAER, for example, published a detailed analysis of NREGA till 2008/9, but this was based on official documents about NREGA emanating from the Ministry of Rural Development (MRD). These documents present a very robust picture of the efficacy of the NREGA program with all objectives met, etc.

Some verification of the claims made by the MRD about NREGA is possible. The NSS employment and unemployment survey for 2007/8 (as other such surveys since 1983) has the following question answered for each member by a household: "How many days did you work in the preceding week, what was the nature of that work, how many hours did you work each day (half day or full day), and what wages did you receive". The nature of activity in each job could be self-employed, unpaid family worker, worked as a regular salaried/wage employee etc. One specific category, numbered 42, is reserved for "worked as a casual worker in NREG public works".

In 2007-08, the government spent Rs 10,800 crore on NREGA and created according to the NSS a total of 492 million person days of employment. At the average wage of Rs 77.85 reported by the NSS, that's a total wage bill of Rs 3,833 crore. Yet, going by the NREGA norm of a 70% wage component, the government should have given out Rs 7,560 crore as wages. So, the net effectiveness of the programme was just above 50%. Poor households accounted for less than a third of all person days' employment provided by the government. So the Rajiv Gandhi index was less than 18 percent.

The present NREGA program effectiveness can be compared with the earlier non-NREGA food for work program in 1999/00. In that year (Table 11), the government claimed that 55 crores of employment was created; NSS data for that year suggest that job creation was of the order of 32 crore man-day's. On a simple effectiveness basis, this would suggest that the program had an efficiency rating of 58.5 percent. However, the NSS data also indicates whether the people working in food-for-work programs were absolutely poor. Of the 32 crore job-days, only 7.8 crore accrued to the poor. This gives the efficiency rating of only 14.3 percent (given as the ratio of 7.8 to 54.7). The journey from food for work to NREGA over the last decade has marginally increased the targeting from 14 percent of the population to 18 percent.

Three different government programs – food subsidies in 1984/85 (the Kirit Parikh study), food for work scheme in 1999/00 and NREGA in 2007/8 – suggest an efficiency less

than 22 percent (PDS) and in recent years around 16 percent (average of 14 and 18 percent). Could this money be better spent, and targeted?

Poverty Removal with Perfect Targeting

Given the inefficiency and ineffectiveness of government programs to remove absolute poverty, there is a theoretical calculation of some relevance. If the assumption is made of perfect knowledge and perfect targeting i.e. the government knows who exactly is poor and by how much (the poverty gap), then the total theoretical cost of poverty removal can easily be calculated.

This is done in Table 7. The poverty gap estimates are available from NSS data itself. The data for 2009 onwards are "estimates". Regardless, the cost of poverty removal is shockingly low – at least shocking with respect to the expenditures on policies oriented directly towards poverty removal e.g. PDS, NREGA, fertilizer and kerosene subsidies, etc. In 1983, it would have cost the government of India Rs. 17000 crores, or 7.8 percent of GDP, for full poverty removal. In 2007/8, at the time of the full launch of just the NREGA program, full poverty removal would have cost Rs. 42000 crores, or just 0.9 percent of GDP. Four years of 7 percent per capita per year growth (or an increase in average incomes and consumption of close to 30 percent) should bring the Tendulkar poverty level down, on a conservative basis, to only 19 percent poor. This would imply that the cost of full poverty removal in fiscal year 2011/12 is only Rs. 39,000 crores, or only 0.43 percent of GDP. Interestingly, the amount is equal to the estimate of just one government program, NREGA.

Table 7: Cost of poverty removal in India, 1983 - 2011/12

	1983/84	1993/94	2004/5	2007/8	2009/10	2011/12
Population (in mil)	723	892	1089	1138	1176	1200
Percentage poor (Tendulkar line)	58.5	47.8	37.1	27.9	23.5	19
Poor Population (in mil)	423	426	404	318	276	228
Poverty line (Rs. Per month)	114	271	488	591	723	886
Percent poor gap	29.8	24.1	21.5	18.5	18	16
Cost of removal of poverty with perfect targeting (000 cr)	17	33	51	42	43	39
Nominal GDP (000 cr)	221	866	3130	4700	6539	8974
Perfect targeting (% of GDP)	7.80	3.86	1.63	0.89	0.66	0.43

Notes: All data for 2009 and 2011 are estimates

Section 9: Education – *The* instrument of inclusive growth

The lack of a significant inequality increase in India is unexpected, but some explanations are possible. Human capital is a major attribute of income and consumption for a vast majority of the population. What has happened over the last twenty years is a manifold expansion in schooling. Today, over 93 percent of children in rural India ages 5-14 are going to school; the proportion thirty years ago was less than half this number. Education, or human

capital, is a major asset of the non-rich and any successful development process ensures that education attainment spreads.

Education inequality indices also have a built-in equalizing quality. The rich always had education, and it is unlikely that their level of educational attainment ever goes significantly past 16 or 17 years of schooling. But the not-rich proceed from one or two years of average schooling to, over time, at least 12 years of schooling. This transformative process occurs in all countries and maybe is one important reason why the Kuznets inverted U curve of inequality has not received confirmation from most developing countries[10]. To be sure, after level convergence with the rich, quality considerations come into play, considerations that can lead to a worsening of inequality.

Table 8 presents data on educational inequality in India. For each person, schooling attainment levels are computed and the Gini index calculated. The results are strikingly uniform – whether males or females, urban or rural India, there has been nearly a 30 percent decline in inequality. From a level of 0.71 in 1983, educational inequality has steadily declined to 0.52 in 2007/8.

Table 8: Education Inequality in India - 1983-2007

Year	India	Rural	Urban	Female	Male
1983	0.71	0.76	0.56	0.79	0.63
1993	0.66	0.69	0.53	0.73	0.59
2004	0.58	0.62	0.47	0.64	0.52
2007	0.52	0.54	0.42	0.58	0.46
% change 1983/07	-27.3	-28.4	-24.5	-27.2	-27.1

Source: NSSO employment-unemployment data, different years

Thomas et. al (2001) present data on the education Gini for a large set of countries for the time-period 1960 to 2000. Their estimates for population above 15 years of age are near identical to ours. Interestingly, the rate of change of educational inequality that the authors observe for China for the period 1980-2000, (-.91 percent per annum), is near identical to the rate of change observed for India (-.89 percent). This places both countries in the top two thirds of developing countries (in terms of education Gini decline). The above data for population ages 8 and above shows education inequality in India, which is declining at a rate of 1.27 percent per annum.

Education very likely is the story of inclusive growth in India. Table 9a presents educational attainment and youth literacy (defined as individuals in the age group 8 to 24 with at least 2 years of schooling) data for the different states of India for 1983 and 2007.

[10] If the formerly socialist transition economies are excluded (formerly Soviet Union, China, Laos, Cambodia and Viet-Nam) then there are very few regions and countries revealing a significant increase in inequality besides those in the Anglo-Saxon developed world.

Also reported is the important ratio of girl/boy educational attainment. A number close to 100 percent is indicative of zero gender bias. On an all-India basis, there was considerable gender bias in India in 1983 with girls attaining only 60 percent of the levels achieved by boys. In 2007, that number had reached 89 percent – near equality. Results are also presented for the aggregate of poor Bimaru states. Gender equality in these states is very close to the overall national average.

Table 9a: Progress of Youth Education in India, 1983 - 2007/8

	Years of Education (ages 8-24)				Literacy (% of population)			
State	1983	2007	% change	Female/Male	1983	2007	% change	Female/Male
Andhra Pradesh	3	6.6	58	86	51	88	64	90
Assam	4.5	6.5	77	95	73	94	84	99
Bihar	2.6	4.6	40	77	43	76	45	81
Chhattisgarh		5.7		91		91		95
Delhi	6.4	7.7	92	94	83	94	90	97
Gujarat	4.1	6.6	68	90	68	92	73	93
Haryana	3.7	6.9	49	93	61	92	53	92
Himachal Pradesh	4.7	7.6	72	101	78	98	76	98
Jammu & Kashmir	3.4	6.5	58	87	54	90	60	91
Jharkhand		5.6		82		85		87
Karnataka	3.8	7	70	96	60	92	75	96
Kerala	6.6	8.2	98	105	95	99	97	100
Madhya Pradesh	2.9	5.8	52	87	52	90	54	92
Maharashtra	4.6	7.5	70	96	73	96	76	97
Orissa	3	6	58	87	54	86	63	88
Punjab	4.3	6.9	87	104	70	91	87	98
Rajasthan	2.6	5.6	34	76	45	83	37	81
Tamil Nadu	4.4	7.7	72	99	73	98	76	98
Uttar Pradesh	3.1	5.6	45	90	51	83	50	90
Uttaranchal		6.5		97		91		97
West Bengal	3.7	5.9	74	93	63	90	78	95
All-India	3.6	6.3	63	91	60	89	67	92
Bimaru states	2.9	5.5	44	85	49	83	48	88
Small states	5.1	7.5	79	98	77	96	78	94
North East	4.5	6.7	84	98	78	97	88	98

Notes: Bimaru states refer to the aggregate of the poor states - Bihar, Madhya Pradesh, Rajasthan and UP.
Literacy is defined as greater than or equal to two years of education

Educational expansion in India is expected to have several multiplier effects. Expansion and equality of female education is expected to accelerate the process of women entering the labour force and of further declines in fertility. This is a virtuous circle – girls get educated, they demand and are expected to work, their fertility rates decline, the development of the

middle class gets accelerated, which further enhances the growth process. This makes the growth process inclusive.

Disaggregated data also shows that educational expansion has been higher among the dis-privileged communities. Scheduled castes (SC) and scheduled tribes (ST) jointly show an increase in educational attainment of 144 percent between 1983 and 2007/8. (Table 9b). The increase for the entire population: about half the percentage gain of the SCSTs, 75 percent. Also reported is the increase in female/male educational attainment. While "all groups" increase this ratio from 63 to 91 percent i.e. in 2007/8, for every 1 year of schooling a boy completes, girls complete 0.91 years, the SCST group shows a larger rate of increase, from 45 to 86 percent. The story is the same for all the dis-privileged communities - rapid growth in mean years of schooling and catch-up by females in education attainment. It is very likely that at the period of writing (March 2011) there is parity in the educational attainment of boys and girls. The recently released ASER data on education in rural India is consistent with the conclusion that girls and boys today enjoy near equal education in India.

None of the above statistics control for an important attribute about education – its quality. It is very likely that the quality gap between the rich and the poor has not diminished.

Table 9b: Youth Educational Attainment, 1983 - 2007/8

	Average years of schooling				Relative female/male education (in %)			
	1983	1993	2004	2007	1983	1993	2004	2007
Social category								
Dis-privileged	2.5	3.4	5.4	5.5	51.9	64.7	82.8	88.1
- SC	2.5	3.4	5.5	5.7	46.5	60.4	80.8	88.3
- ST	2	3	4.9	5.3	43.6	57.5	79	80.8
- SCST	2.3	3.3	5.3	5.6	45.4	59.4	80.2	86
- Muslims	2.9	3.7	5.4	5.4	64.4	75.8	88.9	92.2
Privileged	4.3	5.2	6.9	6.8	66.8	77.2	87.6	92.7
All groups	3.6	4.5	6.3	6.3	62.8	73.4	85.8	90.8

Notes: Youth defined as those between 8 and 24 years.

Section 10: The Driver of Inclusive Growth – The Middle Class

Apart from traditional determinants of growth, labour and capital, economists have added some new growth drivers. Prominent among the new explanations is the hypothesis that good institutions lead to higher growth. In Bhalla (2007), a "new" hypothesis was tested: that rather than institutions, the middle class was an important determinant of growth accelerations.

By definition, the middle class are not the poor, and not the rich. The middle class is a sense of values, an indicator of aspirations, a belief in "law and order". In contrast to the landed industrial elite, the middle class comprises of individuals who made money the old fashioned way – by earning it. Thus, it is logical is for the middle class to believe in the opposite of what the traditional elite believes. Its own self-interest demands an increase in its own welfare, but its gains can come only from a more open economy, from fewer controls on its own enterprise, from more economic freedom. Thus, the middle class and the traditional

elites demand opposite "rules" of behaviour, opposite institutions. In this battle, the middle class *has* to win out. Due to sheer size of its numbers, if not the logic of its position. This is why "good" institutions, and development, are inevitable. Institutional development *is* the development of the middle class.

Especially institutional development pertaining to economic freedom. There are numerous instances in history (Korea in the 1970s, Chile in the 1970s and 1980s, China in the 1990s and today) when the middle class shied away from demanding what it believed in the political sphere. For it, merit based economic growth, which enhanced its own relative value, was at a lexicographic premium to everything else. And merit can only be enhanced by increases in both the quantity, and especially the quality, of education. But extra education is no good in a feudal, closed economy. Therefore, the middle class is at the forefront in demands for opening up the economy. *So economic freedom, in all its manifestations, is the first demand of the middle class*. After such demands are near fully met, does the middle class turn its considerable clout and attention to demanding improvements in the political institutions landscape. The rise of the middle class gives rise to institutions; hence, institutional development most likely follows economic growth.

The Middle Class Line

The definition of middle class used in Bhalla (2007) was the following: *the middle class line for all countries and all times corresponds to the income level corresponding to the poverty line in the rich, developed OECD world.* A weighted average of these poverty lines is around PPP $8.2 per capita per day 1996 prices or PPP$ 16000 in 2010 prices for a family of four[11]. This is the beginning of the non-poor in the developed world and the beginning of the non-poor is also the beginning of the lower middle class. The beginning of the rich is defined to be 10 times this level or approximately $ 160,000 for a family of four. A decline in absolute poverty and a rise in the middle class are two related but different aspects of the transformation in any economy.

This (Bhalla) definition of middle class is simple, straightforward, and unlike other attempts, absolute. Note that these are the same levels in US dollar prices since one US dollar, by definition, is equal to one PPP dollar at any point of time. The definition says that once an individual's income is more than PPP $ 4000 a year, then that person has just crossed from being poor to being non-poor – or from poor to being the *beginning* of the middle class.

Once a middle class definition is obtained, the beginning of the *rich* class should be a straightforward matter. It is, but the definition is also arbitrary. There are no accepted definitions of the rich though a reasonable starting point (and one used here) is that the rich

[11] Poverty lines have conventionally been defined in 1993 PPP per capita per day terms. In the US, this poverty line was equal to $ 10.4 per capita per day; in Japan, 6.4 dollars, and in Germany 6.7 dollars a day. The population weighted average of the poverty lines in OECD economies: PPP$ 7.7 per capita per day. In 1996 prices, this becomes $ 8.185 per day. Note that the World Bank has set the poverty line for developing economies at $ 1.08, so the middle class definition is approximately 7 times the developing country poverty level.

have a starting level of income that is *ten* times the starting level of the middle class. In 2010 prices, this is conveniently at $ 40000 per capita per year.

In 2010 rupees, the middle class line for India is Rs. 3840 per capita per month or for a family of four, Rs. 1.8 lakhs a year. On a per capita per day basis, the Tendulkar poverty line in 2010 would be approximately Rs. 25; the middle class line, Rs. 121. Those earning between Rs. 25 and Rs. 121 per capita are non-poor by Indian standards but poor by developed country standards. Conceptually, this is the region where consumption is still oriented towards basic consumption – towards better food, better housing, and the beginning of better education and health. In terms of better food, there is movement away from calories to proteins, from cereals to fruits and vegetables and milk. In this region of income, participation in consumption of international goods is small.

This definition of the middle class helps explain growth (see below) and helps explain foreign investment in an economy. Such investment is primarily for the purchase of international goods, and hence foreign investment is attracted to countries where the size of the middle class begins to approach and exceed 10 percent. An international middle class line also helps explain attributes of the middle class in different parts of the world – its education levels, its choice of professions, and its choice of consumption goods. Most importantly, the middle class is about a change in values, an attribute noted by Aristotle some 2500 years ago.[12]

Table 10 presents estimates of the middle class in all the states of India. Data are presented for four years – the beginning of the reform period 1993, 2004 and projections for 2009 and 2014. The NSS surveys, along with the NCAER Income and Expenditure surveys for 1994/95 and 2004/5 are spliced together to form a consistent set of estimates for the middle class level in different states. As noted earlier, a troublesome aspect of the NSS data is that these data fail to capture more than half of the actual consumption (as estimated by the national accounts). The NSS based consumption estimates are therefore "adjusted" to match the national account estimates of income and consumption.

At the time of the reforms in 1993, less than 15 percent of the Indian population was middle class. This fraction has expanded in a non-linear fashion since then, and this trend is expected to continue for most of this decade. In 2009, the share of the middle class had reached 47 percent.

The All India data in Table 10 also presents estimates of the "elasticity of middle class". Parametric estimation allows one to estimate the percentage change of the fraction in middle class with the percentage change in average income. The elasticity is a guide to what one should expect to happen with an increase in overall per capita growth. The all India estimate for 2009 is 0.37 – this suggests that with each 7 percent increase in GDP per capita, the size of the middle class should increase by about 2.5 percent per year. Note that the elasticity estimate for 2014 is considerably higher at 0.65; this means that the gap between the non-middle class and the middle class line has narrowed so that future gains in the middle class will be "easier".

[12] See Bhalla (2002, 2007) for detailed explorations of the middle class

Table 10 : Evolution of Middle Class and how it might change, 2004-14

	Percentage of Middle Class in Population			Elasticity of Middle Class		
State	2004	2009	2014	2004	2009	2014
Andhra Pradesh	22.5	45	57.5	0.11	0.64	0.71
Assam	25.2	49.9	56.4	0.02	0.78	0.76
Bihar	11.7	25.9	42.1	0.35	0.11	0.71
Chhattisgarh	17.7	26.7	33.8	0.04	0.40	0.15
Delhi	53.6	81.7	86.8	0.59	0.05	0.72
Gujarat	31	56	66	0.39	0.63	0.73
Haryana	36	61	68	0.29	0.81	0.67
Himachal Pradesh	48.3	73.6	80.1	0.43	0.05	0.54
Jammu & Kashmir	30.5	63.2	76.1	0.81	0.98	0.46
Jharkhand	22.4	37.7	55.3	0.21	0.02	0.71
Karnataka	24.5	42.5	51.5	0.23	0.18	0.65
Kerala	43.5	69	80.5	0.57	0.02	0.56
Madhya Pradesh	15.5	32	43.5	0.18	0.32	0.62
Maharashtra	32	49.5	58.5	0.42	0.10	0.61
Orissa	13.1	26.2	31.7	0.05	0.35	0.38
Punjab	39.5	64.5	76.5	0.27	0.69	0.72
Rajasthan	22	44	63.5	0.44	0.10	0.94
Tamil Nadu	25	46	58.5	0.17	0.49	0.76
Uttar Pradesh	18	35.5	55.5	0.37	0.04	0.84
Uttaranchal	22.2	47.8	60	0.07	0.56	0.76
West Bengal	24.5	39	51.5	0.08	0.50	0.67
India	*26.2*	*47.1*	*70.2*	*0.29*	*0.37*	*0.65*

Note: 1) Elasticity of Middle Class measures the percentage change in the fraction of the middle class with each 1% change in average incomes

2) 2014 data are projections based on per capita GDP growth of 7% per year for the next five years.

Sustainable inclusive growth

The poverty line for the developing world is approximately PPP $ 1 a day. The poverty line in the developed world is PPP $ 10 a day. In other words, a poor person in the developed world is about 10 times richer than her counterpart in the developing world. What happened during the 1980s and 1990s was that there was substantial movement of the Indian population from below the poverty line to above the international poverty line i.e. above $ a day but considerably less than the Western poverty line of PPP $ 10 a day. The pace of expansion above the middle class line has been recent and coincident with an acceleration of GDP growth.

The most asked question about Indian growth is whether this recent acceleration or higher level of growth is sustainable. The importance of this question cannot be under-estimated. It affects monetary policy (should interest rates be raised to prevent "overheating?) and social policy (is the Naxal Maoist movement likely to succeed because the poor are not benefitting from this high growth?). Most of the discussion in this paper suggests that the nature of growth in India has been broadly of the inclusive variety – poorer states are now growing faster, the poverty levels of the poorest groups is dropping faster, the Millennium Development Goal of less than 15 percent poor has been reached a decade earlier than 2015, real inequality has stayed constant, education levels have vastly expanded, and the middle class has increased to more than 40 percent of the population.

But what about the future? Is 9 percent GDP growth in India the new normal? And will this growth be equally inclusive? One attempt at this forecast, and an explanation of the past, is to examine the determinants of growth in the different states of India.

The model is straightforward – relate future growth to past or initial levels of poverty and/or the middle class. Towards this end, the time-period 1980 to 2010 is divided up into five-year periods, and the question asked is whether declines in poverty levels, increase in educational levels, and/or increases in the middle class have any effect on future growth? For each period, the dependent variable per capita income growth) is the average for the period *subsequent* four year period. For example, the data for 1980 would have log initial per capita income for 1980 and income growth for the years 1981 to 1984.

Table 11 presents the results. All the three variables – initial (log) income, initial middle class, and initial education are significant in explaining state level growth in India. The broad results are as follows: each 10 percent rise in the middle class leads to an increase in GDP growth of about 1.4 percent. Each 1 year increase in *average* education of those in the age group 8-24 leads to a 2.25 percentage point increase in GDP growth. Male and female education seems to have equal effects on per capita growth, but male education is more significant when both female and male education are in the equation.

Table 11: Explaining Growth in India - State data, 1980-2009

(Dependent Variable: Five year per capita income growth)

	Model 1	Model 2	Model 3
Log (Initial) Per Capita Income	-11.1**	-10.7***	-11.2***
	(-7.80)	(-7.52)	(-7.81)
Middle Class (% of population)	0.14***	0.13***	0.15***
	(4.88)	(4.39)	(4.77)
Education (mean years)			
All	2.68***		
	(5.7)		
Male			2.00*
			(1.82)
Female		2.26***	0.82*
		(7.13)	(0.98)
# of states	24	24	24
# of observations	143	143	143
Adjusted R^2	0.4874	0.4757	0.4859

Note that the determinants are initial values lagged five years. As such they are exogenous to the growth process, but are suggestive of a growth process that ensures a feedback from inclusion to growth. An increase in schooling is almost always due to expansion of schooling at the lower end of the distribution. A large part of the increase in schooling is due to a relative expansion of girl schooling. In the early 1980s, a girl had less than half of the educational achievement of a boy; in 2005, this ratio had increased to 70 percent and today, circa 2010, is likely to be around 80 percent. Average educational attainment has increased at the rate of 0.1 years each year for the last 25 years; for the last decade, this increase has been closer to 0.15.

Section 11 – Some explanations, and simulations

If the model results are taken at face value, this suggests that each year will add about 0.45 percent to GDP growth. But catch-up considerations will lead to a decline in growth rate of about half this magnitude resulting in a net increase of about 0.2 to 0.3 percent per year.

The previous sections have documented the radical changes that have taken place in the Indian economy over the last twenty-five years. A large part of the initial transformation of an economy is accounted for by the movement of labour out of agriculture. The poor benefit the most from this transformation – and the large growth changes at the bottom end provide testimony to this occurrence.

The process of growth, inclusion, and transformation of the Indian economy can also be illustrated by the changing nature of employment of the poor. Essentially, the process of change has meant the following – as growth occurs, and accelerates, there is demand for workers outside of agriculture. In 1983, 73 percent of male SCs worked in agriculture; in 2007, this fraction was down to 62 percent. (Table 12a) Similar declines are observed for other groups. More revealing is the pattern of employment for "unpaid family labour" working in agriculture. A conventional expectation would be that this fraction declines with growth. This is not supported by the data. Instead, what one finds is that this fraction increases; for example, amongst SC males, only 6.6 percent worked as unpaid family workers in 1983; for the last decade this fraction has been close to 10 percent. For non-SC, non-STs (primarily land owning OBCs) male workforce as unpaid labour has increased from 14 to 22 percent. A similar story exists for female workers.

Additional support for outside agriculture labour is provided by the data on construction. Some authors have argued that the NREGA jobs program has helped to bolster real wages. Most likely, real wages in the rural areas have risen because of increased demand for unskilled (and skilled) labour. In 1983, 3.7 percent of SCs and 2.3 percent of non-SCST's worked in construction. By 2007, more than 5.5 percent of SCs were engaged in construction work; in the case of non-SCSTs, the share had jumped to more than 9 percent. And within construction, in parallel with the findings for within agriculture, the share of unpaid labour has also risen reinforcing the inference that the Indian labour market has become "tight" in recent years.

Table 12a: Changing pattern of Indian workforce, agriculture, 1983 - 2007/8

	Males		**Females**	
	% of workforce in agriculture	% of workforce in agriculture as family workers	% of workforce in agriculture	% of workforce in agriculture as family workers
1983				
Scheduled Tribe (SC)	81.4	12.7	87.2	45.7
Scheduled Caste (ST)	73	6.6	79.7	19.1
Non SC, Non ST	69.2	14.1	79.5	42.8
1993/94				
Scheduled Tribe (SC)	78.9	15.4	86.3	47.9
Scheduled Caste (ST)	71.1	9.5	80.1	26.6
Non SC, Non ST	66.8	19.4	78.4	50
2004/05				
Scheduled Tribe (SC)	74.9	17.1	84.9	47.7
Scheduled Cast (ST)	61.9	11.8	80.7	32.2
Non SC, Non ST	62.2	23.5	78	53.4
2007/08				
Scheduled Tribe (SC)	74.7	17.7	84.8	49.9
Scheduled Caste (ST)	61.7	9.8	77.6	26.8
Non SC, Non ST	64.8	21.6	77.2	51.4

Table 12b: Changing pattern of Indian workforce, construction, 1983 - 2007/8

	Males		Females	
	% of workforce in construction	% of workforce in construction as family workers	% of workforce in construction	% of workforce in construction as family workers
1983				
Scheduled Tribe (SC)	3	3.8	1.4	12.4
Scheduled Caste (ST)	3.7	0.9	0.9	0
Non SC, Non ST	2.3	2.2	1	10.8
1993/94				
Scheduled Tribe (SC)	4.6	3.8	1.5	19.9
Scheduled Caste (ST)	5.5	1.5	1.1	8.3
Non SC, Non ST	2.9	2.4	0.5	14.4
2004/05				
Scheduled Tribe (SC)	3.2	9.7	1.8	58.3
Scheduled Caste (ST)	5.3	8.9	1.5	43.7
Non SC, Non ST	9.3	12.2	3	57.3
2007/08				
Scheduled Tribe (SC)	2.9	10	1.1	35.5
Scheduled Caste (ST)	5.6	8.5	1.6	41.8
Non SC, Non ST	9.3	11.8	2.7	47

For the better part of the last decade, the Indian economy has grown at a rate above 8 percent per annum. Most observers have been sceptical, and in recent years the sustainability of this growth is increasingly being questioned. The reduced form determinants of growth model can be used to both project the likely pattern of future growth, and to test whether the inclusive nature of past growth is likely to lead to faster or slower, growth in the future. The model presented earlier argued that past and lagged values of the share of the middle class and education has an effect for subsequent growth. This model was estimated for five year periods from 1980 to 2009. The initial values for 2010 can be used to forecast growth for the subsequent four years, 2011 to 2014.

Table 13 reports the values for the various determinants, and the projected growth, for all five year periods since 1980. The data are presented for the Bimaru+ poor states (comprising of Bihar, Madhya Pradesh, Uttar Pradesh, Orissa and Rajasthan) and the rest.

Table 13: Determinants of Growth in India: 1980 - 2014

Non-Poor States

Year	Initial Education (in years)	Initial Share of Middle Class (%)	Initial per Capita Income	Per Capita Growth	Model prediction
1980-84	3.9	0.4	8103	2.4	3
1990-94	4.9	12.1	10938	4.2	3.6
2000-04	6	28.6	16317	4.4	4.7
2010-14	6.9	56.5	26903		5.2

Poor States

Year	Initial Education (in years)	Initial Share of Middle Class (%)	Initial per Capita Income	Per Capita Growth	Predicted Growth Actual Model
1980-84	2.6	0.1	5431	1.6	3.1
1990-94	3.5	3.5	7331	0.3	2.9
2000-04	4.3	12	8103	3.1	5
2010-14	5.6	35.1	13359		6.5

All India

Year	Initial Education (in years)	Initial Share of Middle Class (%)	Initial per Capita Income	Per Capita Growth	Model Prediction
1980-84	3.4	0.2	6634	2.1	3
1990-94	4.2	8.3	8955	2.5	3.3
2000-04	5.2	21	12088	3.8	4.8
2010-14	6.3	46.6	19930		5.8

Note: 1) Poor states comprise of: Bihar, Madhya Pradesh, Assam, Orissa, Rajasthan & Uttar Pradesh.
2) Initial refers to the beginning year of the range stated in column 1
3) Real income is in 2004-05 rural prices
4) 2010-14 are forecasts based on historical values.

The Bimaru+ states accounted for close to 50 percent (actually 45 percent) of the population in 2010. The history, and forecast, contained in Table 13 is illustrative of the synergistic process from inclusion, to growth, to more inclusion. The poorer states have larger expansions in education and the middle class; these larger expansions generate faster growth. Until the 2000-2004 period, the poorer states also grew at a slower rate – about 0.5 to 1 percent slower. But since 2005, the poorer states have been growing faster, and faster at an average of 1 percent per annum. This extra pace should persist for most of the rest of this decade i.e. the inclusive growth pattern, with the poorer section growing faster than average, is likely to continue.

Section 12 – Conclusions

This paper has attempted to investigate several aspects of the "inclusive growth" story in India. The high growth phase started in India in the 1980s and appropriately the reference or benchmark year of investigation is 1983. The last year for which household level data exists, and is examined, is the 64th round of the NSS, the survey period being from July of 2007 to June of 2008. Data for two separate surveys, the consumer expenditure and employment and unemployment survey, are examined for this year. The macro-economic data examined has been updated to 2010/11, with estimates for the full year.

The major result emerging from the analysis is twofold. First, the Indian experience for this long 30 year period is one of genuine inclusive growth, and inclusive growth in most dimensions considered. The dual side of this result is that government policy, particularly in the form of poverty alleviation, has been singularly ineffective in generating the inclusive growth outcomes.

The findings in this paper answer some questions, and raise several others. The surprising inclusive nature of growth in India calls for a deeper examination. Transition matrices for the different social groups need to be examined further; what role has migration played in balancing the forces of supply, demand, and inclusion? Further, both an examination of past effectiveness of government policies, and the need for a changed role and focus of such efforts need to be explored. Given that even according to the recently increased Tendulkar poverty line (close to the recently increased World Bank poverty line of $1.25 per capita per day) poverty elimination with perfect targeting will cost less than 0.6 percent of GDP, the question for Indian policy makers, and analysts, is whether instead of more poverty reduction programs, hasn't the team come to further increase the poverty line, and to change the focus to more efficient targeting methods?

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Appendix I – Matching NSS consumption to National Accounts consumption

The objective is to use NSSO survey data for 27 major consumption items and match, item for item, these estimates with data available in national accounts under the heading of personal final consumption expenditures. The method was to "blow up" the survey based estimates to the NA means for 27 major consumption items. This means that if a person consumed X percent of the survey mean, she would consume the same X % of the NA mean. If she does not consume potatoes in the surveys, no potatoes are allocated to her in the (adjusted) estimate. If a person does not consume TVs, or cars, none of the "missing" TVs is allocated to this person. This method estimates an adjusted consumption estimate for each household and therefore allows for percentile distributions of the adjusted consumption estimate to be derived. The mean of the survey estimate for each item is "forced" to equal the mean NA estimate for the same item; hence, by construction, the survey mean is made equal to the national accounts mean.

Some results from NSSO-NA matching for individual items

One definite source of bias in the NSS data is the treatment of housing. Estimates for housing consumption are based on actual rental paid for housing; owner occupied housing is treated with a zero rental! Further, very few households in rural areas live in rented homes, so for most of the rural population, the rental value of housing is zero. In 1993/94 only 24 percent reported any rental value of housing; in 2004/5 the fraction was considerably lower at 15 percent.

This practice of ignoring household expenditures might have been approximately correct in the 1960s, and 1970s and perhaps even the 1980s but is untenable for an India whose per capita income is four times higher. The survey procedure on housing should impart a downward bias to inequality and it does; imputing a rental value for all households (based on a regression relating fraction of expenditure on housing to total expenditure) results in the Gini increasing by 1 % in 1983 and 1993, and 3 % in 1999 and 2004/5.

Two major items in food and non-food category [spending in hotels and restaurants and spending on banking, insurance, and financial services] are not adequately covered in the NSS surveys. Allocating such expenditures on the basis of actual food and non-food expenditures yields almost zero change in inequality indices.

NSSO-NA matching – overall results

The results were revealing – the bottom 40 percent of the population understated their expenditures by 29 percent while the average household understated its expenditure by 34 percent. The top 20 percent (the rich) understated their expenditures by 41 percent. Two conclusions are relevant – first, even the poor understate their true consumption, an occurrence documented by the fact that even for food items, expenditures are increasingly being understated in the surveys. Second, there is a large 12 percentage point gap between the understatement of the rich and the poor. However, since the adjustments are made with reference to *average* expenditures, the "error" between the rich and the poor has only a small magnitude – only 5 percent. In other words, if India is a typical poor country, the "error" made by using NA per capita expenditures rather than survey expenditures is only around 5 percent at a *point in time*,[13] and almost zero percent for changes over time. To reiterate: the matching of survey consumption with national accounts consumption, often involving a large adjustment in the former, fails to reveal any large differences in the magnitude of underestimation between the rich and the poor, at least for 5 survey years for India (1983, 1987/88, 1993/94, 1999/2000 and 2004/5.)

Appendix Table 1: Matching of survey to national accounts consumption (in percent)

Year	1983	1993/94	1999/00	2004/05
Essential food	83.3	87.3	77.4	79.0
Non-Essential food	60.0	59.9	51.5	48.2
Essential non-food	47.3	46.8	58.0	49.8
Education & Medical Care	68.2	55.5	63.1	54.1
Non-Essential non-food	45.7	42.8	36.6	31.8

Taking *all* the factors responsible for differences in survey and NA means, including non-coverage of the super rich and larger understatement by the surveyed rich, a very conservative assumption is that household surveys (in a poor country like India) can be expected to miss out on no more than 10-15 percent of total expenditures in any given year. In contrast, the measured survey to consumption ratio in India was 49 percent in 2004/5, down from 55 percent in 1999/2000 and 62 percent in 1993/1994. These are large gaps, gaps

[13] An identical exercise was carried out for three other survey years – 1983, 1987-88 and 1999-2000. While the average multiplier varied, the relative understatement of the different sectors of the population stays constant.

that cannot be explained by assumptions of missing out the rich living in gated communities etc. Further, the under-estimation is across all commodities, including and especially food. The rich, even with their wealthy incomes, cannot consume all of this unmeasured food, or even most of it, or even more than a small fraction.

A rough break-up of this 15 percent understatement is that two-thirds of this difference is likely due to definitional and other reasons, and one third (or 5 percentage points) may be due to extra understatement by the rich, extra with reference to the understatement of the average consumer. This implies that around 85 to 90 percent is a reasonable estimate of the survey to national accounts ratio i.e. to make a conversion from national account estimate to the "correct" survey estimate, one should discount or reduce the NA estimate by around 10 to 15 percent. Survey to NA ratios of 70, 60 or 50 percent cannot therefore be accurate, given all that we know of the limits to human consumption, especially of such limits to food consumption. A lower bound of S/NA ratio is likely to be about 80 percent; anything below this number is likely to mean that expenditures of the poor are actually being under-reported i.e. household surveys are likely to be overstating poverty for such countries.